

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

appearance, the word "the" has been deleted and the words --- that of the average overall --- substituted ; Claim 18, line 8, correct "decreasing" to --- increasing --- ;

Claim 20, line 1, before "19", the word "Claim" has been added;

Claim 23, line 1, "17" has been corrected to read --- 19 --- ;

Claim 25, line 1, "15" has been corrected to read --- 19 --- ;

Claim 27, the word "layered" has been corrected to read --- layered --- ;

Claim 27, line 10, before "combined" the words --- majority of pores of --- and before the words "said independent", the words --- the majority of pores of --- have been added.

REMARKS

3 & 4) Applicant respectfully submits that Examiner's rejection of Claims 23-25 under 35.U.S.C.112 is no longer applicable in view of the above noted amendments to the Claims.

5 & 6) Applicant respectfully submits that Examiner's rejection of Claims 1, 6 and 11 under 35.U.S.C.103 as being unpatentable over Choi ('373) in view of Baravian ('385) is incorrect, particularly as the parent Claim 1 now has been amended. Column 3, lines 6-67 of Choi specifically states " --- that the overall pore size of immediately facing or laminated upstream – downstream filter medium layer 6 and filter medium layer 7 are substantially less than the combined individual sizes of each of the two filter medium layers 6 and 7 when each layer of filter medium layer 6 and 7 is considered separately --- ". On the other hand, Applicant's Claim 1, as now amended, specifically and clearly states " --- calculated including factors of relative thicknesses and relative pore sizes so that the overall average pore size of the combined successive thicknesses is smaller than that of the average overall pore size of that of the finest fiber thickness, so as to optimize filtration performance efficiency --- ". Seemingly, the aforequoted statement of Choi ('373) begs for clarification in and by itself. However, this

statement in Choi ('373) is made to explain the curves set forth in Figure 1 of Choi which, as is stated at Column 2, lines 50-55 "--- is a pore distribution chart illustrating on the Y-axis the number of pores per unit area and, on the X-axis, the pore size (micrometers) for each of two preselected separate layers of filter medium, their combination when in immediately facing relation, and their combination when in spaced relation. In context, the Choi statement ('373) and Figure 1, clearly does not anticipate the clearly recited and inventive calculated arrangement which includes relative pore sizes and relative thicknesses wherein the average pore size of combined successive thicknesses is smaller than that of the finest fiber thickness.

In arriving at the unique calculated arrangement of amended Claim 1, Applicant recognized beyond what was recognized in Choi '373 that many of the larger size pore centers of an upstream thickness filter layer are not aligned with many of the smaller pore size centers of a facing downstream thickness filter layer with such upstream larger sized pores in effect overlapping at least a portion of such downstream pores. With the recognition of this problem by Applicant, Applicant subsequently has calculated an arrangement toward the optimization of filtration performance wherein the overall average pore size of combined successive thicknesses is smaller than that of the average overall pore size of that of the finest fiber thickness so as to minimize the overlapping of smaller pore sizes of a downstream fiber thickness by the larger pore sizes of an upstream fiber thickness. Such an inventive calculated arrangement by Applicant is not even remotely suggested by Choi '373 and in fact, with the previously inventive spacing between layers as taught by Choi '373, such arrangement would not even have been required let alone contemplated.

As to the secondary reference Baravian, although the parent Claim and thus dependent Claims 6 and 11, now have been amended so as not to be limited to chopped, carded fibers, it

respectfully is submitted that this teaching by Bavarian hardly anticipates the now recited novel calculated arrangement as set forth in newly amended Claims 1, 6 and 11. It respectfully is submitted that Examiner has combined the entirely different teachings of Baravian '385, which relates to non-woven synthetic textiles, with the inventive filter fiber layer spacing teachings of Choi '373 in light of Applicant's inventive calculated arrangement. Even if such combination of teachings could be affected without defeating the initial purpose of each, the resulting reference combination would still fail to anticipate the now recited features of amended Claims 1, 6 and 11.

7-15) Applicant notes the several combined reference rejections under 35.U.S.C.103 of Claim 2 over Choi '373 in view of Baravian '385 and AhrHI,909; Claims 3-4 over Choi '373 in view of Baravian '675; Claims 5, 7 and 8 over Choi '373 in view of Baravian and Villiers 464; Claims 9 and 10 over Choi '373 in view of Baravian '385, Villier's '464 and Rotter '672; Claim 12 again over the combination of Choi '373 in view of Baravian '385 and further in view of Choi 2; and finally, Claims 14-17 again over Choi '373 in view of Baravian '385 and Villiers '464. Applicant further notes Examiner's several comments with respect to the teachings of each of these references.

In the interest of brevity in response to these numerous combined reference rejections by Examiner, it respectfully is once again submitted that these combined reference rejections are made in light of Applicant's teachings and, even if combined, would only serve to defeat the initial purposes of each of the cited references. To give Applicant the full scope of patent protection to which it is entitled, it is respectfully submitted that amended parent Claim 1 and the dependent Claims 2 through 17 as amended, as well as amended omnibus Claim 18, should now be held allowable for the several reasons as set forth above. None of the cited references, either

alone or in the various combinations, teach or even remotely suggest the calculated arrangement including relative thicknesses and relative pore sizes as set forth in amended parent Claim 1 wherein the overall average pore size of combined successive thicknesses is smaller than that of the average overall pore size of that of the finest fiber thickness to optimize filtration performance efficiency.

16-22) In response to Examiner's Claim rejections under 35.U.S.C.103 including the following rejections: Claims 19-20 over Anthony in view of Choi '373; Claim 21 over Anthony in view of Choi '373 and Villiers; Claim 22 over Anthony in view of Choi '373 and Rotter; Claims 23-24 over Anthony in view of Choi and Villiers; Claim 25 over Anthony in view of Choi; claim 26 over Anthony in view of Choi; and, Claim 27 over Anthony in view of Choi '373, Villiers and Choi 2, it respectfully is submitted that these Claims 19 through 27, as amended, clearly and patentably distinguished over the now cited references and the references of record, either alone or combination, for the reasons as aforesaid and for the additional reasons set forth hereinafter. Once again, Examiner combines references in light of Applicant's disclosure and, even if such combinations could be affected without defeating the initial purposes of each cited reference, the resulting combinations of teachings would still fail to anticipate the novel inventive concept as now set forth in these amended parent Claims 19 and 27 and dependent Claims 20-26.

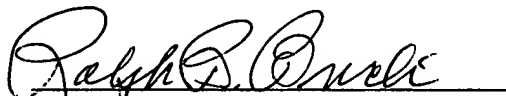
In this regard, the several steps of the primary reference, Anthony, which are directed to the processing of cotton in a cotton gin and not to the method of manufacturing filter media, like any or all of the cited combined references – for reasons aforesaid – completely fail to anticipate the inventive concept of amended method Claims 19-27. As has been previously stated, neither Anthony, Choi '373, nor any of the other cited and combined references – alone or

in combination – teach or let alone suggest the inventive concept that the total average pore size of all face-to-face combined thicknesses be smaller than the total average pore size of that thickness with the smallest pore sizes. In the closest of the cited references, namely Choi '373, there would have, in fact, been little reason for a recognition of the problem let alone a solution to the same. With the inventive spacing between layers, as taught by Choi '373, it would not matter – as in the present application – that the upstream larger pores obscure portions of face-to-face smaller size downstream pores, since in Choi '373 the spacing between layers would accommodate for this – even if Choi '373 had, in fact, recognized such problem. Accordingly, without recognition by Choi '373, or any of the other combined cited references, there would be little cause to address and provide an accompanying solution.

It respectfully is submitted that amended Claims 1 through 27 now be held allowable to give Applicant the full scope of patent protection to which it is entitled and that the instant application be passed to Issue.

In the event Examiner persists in its rejection of the Claims as amended, it respectfully is requested that Examiner telephone Applicant's attorney at the number below to resolve any remaining issues or to arrange for an interview at Examiner's office at a mutually agreeable time. It is to be noted that in the interest of some brevity, Applicant's attorney has elected to respond to Examiner's numerous rejections in a group form rather than on an individual basis so as to avoid further duplication of response.

Respectfully submitted,

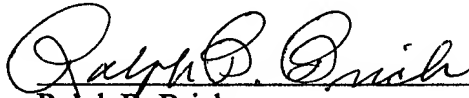


Ralph B. Brick
Registration No. 17,444
Polster, Lieder, Woodruff & Lucchesi
763 S. New Ballas Road

St. Louis, MO 63141
Telephone: (502) 895-4672

CERTIFICATION

I HEREBY CERTIFY that this correspondence is being deposited with the U.S. Postal Service as First Class Mail in an envelope addressed to: Box Non-Fee Amendment, Commissioner for Patents, Washington, D.C., 20231, this 24th day of April, 2002.



Ralph B. Brick